UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,523	12/19/2001	Niranjan Damera-Venkata	10017903-1	3690

			EXAMINER
7590	12/23/2003		SHERALI, ISHRAT I

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ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	**Applicant(s)**
Office Action Summary	10/027,523	DAMERA-VENKATA ET AL.
	Examiner	**Art Unit**	
	Sherali Ishrat	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-29_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-6,8-14,17,22-26 and 29_ is/are rejected.

7)☐ Claim(s) _7,15,16,18-21,27 and 28_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _2, 3_.

4) ☐ Interview Summary (PTO-413) Paper No(s). _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless - -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-6 , 8-14, 17, and 22 are rejected under 35 USC § 102 (b) as being

anticipated by Tow (EP 0 493 053 A2).

Regarding claim 1 and 22, Tow discloses generating a graphical bar code (See

Tow, col. 2, lines 45-46, embedding the digital data in the halftone image i.e generating

a graphical bar code), comprising:

Halftoning regions of an original image incorporating error diffused among

regions of the original image (See Tow, figure 1, col. 3, lines 11-13, Tow shows

producing halftone grayscale image [original image] and col. 3, lines 20-23, Tow

shows modulating the average reflectance of halftone cells in accordance with spatially

corresponding grayscale image samples i.e Tow shows incorporating error diffused

among regions of the original image) and

computed based at least in part upon modulation in the graphical bar code

(See Tow, col. 3, lines 20-23, Tow shows modulating the average reflectance of

haslftone cells in accordance with spatially corresponding grayscale image samples i.e

Tow shows computed based at least in part upon modulation [modulating the average

reflectance of haslftone cells]   in the graphical bar code [corresponding grayscale

image samples] and Tow shows in col. 2, lines 45-46, modulating angular orientation

f halftone pattern in with digital data values [bar code]),

corresponding to a graphical encoding of a message (Tow shows in col. 2, lines

45-46, "modulating angular orientation of halftone pattern in with digital data values

thereby embedding the digital data in the halftone image" i.e corresponding to a

graphical encoding of a message).

Regarding claim 2 , Tow discloses halftone comprises computing quantization

errors for respective regions of the graphical bar code (See Tow, col. 3, lines 20-23,

Tow shows modulating the average reflectance of halftone cells in accordance with

spatially corresponding grayscale image samples).

Regarding claim 3, Tow discloses quantization error are invariant to the

graphically encoded message (See Tow, col. 3, lines 20-23, Tow shows modulating

the average reflectance of halftone cells i.e average reflectance of halftone is

quantization error which invariant to grayscale image samples [bar code]).

Regarding claim 4, Tow discloses average block errors are diffused among

regions of original image (See Tow, col. 3, lines 20-23 Tow shows modulating the

average reflectance of halftone cells in accordance with spatially corresponding

grayscale image samples).

Regarding claim 5, Tow discloses modifying original image regions with diffused error to produce corresponding regions of a modified original image (See Tow, col. 3, lines 20-23 Tow shows modulating the average reflectance of halftone cells in accordance with spatially corresponding grayscale image samples i.e Two shows modifying original image regions with diffused error to produce corresponding regions of a modified original image).

Regarding claim 6, Tow discloses applying matrix-value error filter to produce quantization error to be diffused (See Tow, col. 3, lines 20-23, Tow shows modulating the average reflectance of halftone cells in accordance with spatially corresponding grayscale image samples i.e calculating average reflectance of halftone cells [matrix] and modulation of average reflectance corresponds to discloses applying matrix-value error filter to produce quantization error to be diffused).

Regarding claim 8, Tow discloses quantizing regions of the modified original image to produce corresponding regions of a base image (See Tow, col. 3, lines 20-23 Tow shows modulating the average reflectance of halftone cells in accordance with spatially corresponding grayscale image samples i.e by modulation of halftone cell Two shows . quantizing regions of the modified original image to produce corresponding regions of a base image).

Regarding claim 9, Tow discloses quantizing comprises thresholding region of modified image (See Tow, col. 4, lines 54-56, Tow shows halftone dot patterns are modulated by rotating about their geometric center i.e based on the geometric center [thresholding] halftone image is quantized).

Regarding 10, Tow discloses regions of modified image are thresholded at an intermediate level (See Tow, col. 4, lines 54-56, figures 3A-3B, halftone regions are thresholded [based on the geometric center] at intermediate gray levels).

Regarding claim 11, Tow discloses assigning regions of the base image respective regions selected from possible halftone regions (See Two, see Tow, col. 3, lines 23-28, Tow shows halftone generator has look-up table address by gray scale values to retrieve halftone cells that contain appropriate dot patterns).

Regarding claim 12, Tow discloses quantized regions consist of all dark and bright regions (See Tow, col. 3, lines 39-45, Two shows halfone cells and hatched pattern consist of 1 and 0 i.e consist of all dark and bright regions).

Regarding claim 13, Tow discloses base image are modulated with graphical encoding of the message to produce corresponding regions of the graphical bar code (See Tow, col. 3, lines 20-23, Tow shows modulating the average reflectance of haslftone cells in accordance with spatially corresponding grayscale image samples i.e base image are modulated with graphical encoding of the message to produce corresponding regions of the graphical bar code).

Regarding claim 14, Tow discloses generating a sequence of graphical code words corresponding to graphical encoding of the message (Tow shows in col. 2, lines 45-46, "modulating angular orientation of halftone pattern in with digital data values thereby embedding the digital data in the halftone image" i.e corresponding to a graphical encoding of a message).

Regarding claim 17, Tow discloses one or more graphical code wors are non-information and remaining code words are information encoding (See Tow, col. 4, lines 3-6, some halftone cells are crossed hatched which are background pixels i.e background cells are non-information and the rest information cells).

3.   Claims 23, 26 and 29 are rejected under 35 USC § 102 (b) as being anticipated by Cass et al. (US 6,141,441).

Regarding claim 23, Cass discloses generating a base image having halftone region representative of original image (See Cass, col. 14, lines 55-65, Cass shows "original color image is paired with each signal block in message image, color image is modulated according to spatial subregion pattern of color difference to produce in encoded image" i.e by modulation Cass shows generating a base image having halftone region representative of original image);

probabilistically comparing regions of base image to a set of graphical code words to obtain sequences of graphical code words (See Cass, col. 28, lines 15-20, Cass shows "to estimate [probabilistically] correlating [comparing] signal blocks [base image] with received signal block as identified [graphical code word], the signal [code word] that correlates the most is determined to be signal block sent);

decoding the sequence of graphical code words to produce a decoded message (See Tow, col. 28, lines 18-20 the signal [code word] that correlates the most is determined to be signal block sent i.e Cass is decoding the sequence of graphical code words to produce a decoded message).

Regarding claim 26, Tow discloses base image is generated without the knowledge of original image (See Cass, col. 14, lines 55-65, Cass shows "original color image is paired with each signal block in message image, color image is modulated according to spatial subregion pattern of color difference to produce in encoded image" note that base image is produced by modulation according to spatial subregion pattern of color i.e base image is generated based on signal block in message image not based on original color image).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5.   Claims 24-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Cass

et al. (US 6,141,441) in view of Tow (EP 0 493 053 A2).

Regarding claim 24, Cass shows Halfton of the original image and modulation.

Cass however has not explicitly shown Halftoning regions of an original image

incorporating error diffused among regions of the original image   and

computed based at least in part upon modulation in the graphical bar code

corresponding to a graphical encoding of a message.

In the same fild of endeavor Tow shows Halftoning regions of an original image

incorporating error diffused among regions of the original image (See Tow, figure 1,

col. 3, lines 11-13, Tow shows producing halftone grayscale image [original image]

and col. 3, lines 20-23, Tow shows modulating the average reflectance of halftone

cells in accordance with spatially corresponding grayscale image samples i.e Tow

shows incorporating error diffused among regions of the original image) and

computed based at least in part upon modulation in the graphical bar code

(See Tow, col. 3, lines 20-23, Tow shows modulating the average reflectance of

haslftone cells in accordance with spatially corresponding grayscale image samples i.e

Tow shows computed based at least in part upon modulation [modulating the average

reflectance of haslftone cells]   in the graphical bar code [corresponding grayscale

image samples] and Tow shows in col. 2, lines 45-46, modulating angular orientation

f halftone pattern in with digital data values [bar code]),

corresponding to a graphical encoding of a message (Tow shows in col. 2, lines

45-46, "modulating angular orientation of halftone pattern in with digital data values

thereby embedding the digital data in the halftone image" i.e corresponding to a

graphical encoding of a message).

Therefore it would have been obvious to having ordinary skill in the art at the time

the invention was made to Halfton regions of an original image incorporating error

diffused among regions of the original image and computed based at least in part upon

modulation in the graphical bar code corresponding to a graphical encoding of a

message in the system of Cass because such a system provide efficient process of

encoding message using error diffusion halftoning.

Regarding claim 25, Tow discloses quantization error are invariant to the

graphically encoded message (See Tow, col. 3, lines 20-23, Tow shows modulating

the average reflectance of halftone cells i.e average reflectance of halftone is

quantization error which is invariant to grayscale image samples [bar code]).

Allowable Subject Matter

6.   Claims 7, 15-16, 18-21, and 27-28 are objected as being dependent on reject

base claim but be allowable if rewritten in independent for including the limitation of

base and any intervening claims.

Contact Information

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherali Ishrat whose telephone number is 703-308-9589. The examiner can normally be reached on 8:00 AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone numbers for the organization where this application or proceeding is assigned are 703-892-9314 for regular communications and 703-892-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-4750.
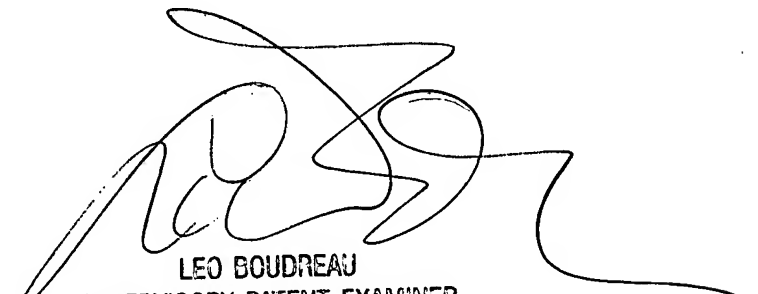
Ishrat Sherali

Patent Examiner

Group Art Unit 2621

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